Western Native Trout Initiative

Island Diversion Fish Screen Retrofit and Bank Stabilization to Protect Bonneville Cutthroat Trout in St. Charles Creek

Project Completion Report, 03-05-2013

Background

St. Charles Creek has been identified by IDFG as "the most important natural spawning location for Bear Lake cutthroat trout," but cutthroat spawning numbers have declined from the thousands of fish observed in the creek in the 1950's, 60's and 70's to fewer than 100 fish in 2003 (IDFG). Irrigation diversion entrainment has been well documented throughout the watershed and is considered a serious risk to the persistence of wild Bear Lake cutthroat trout.

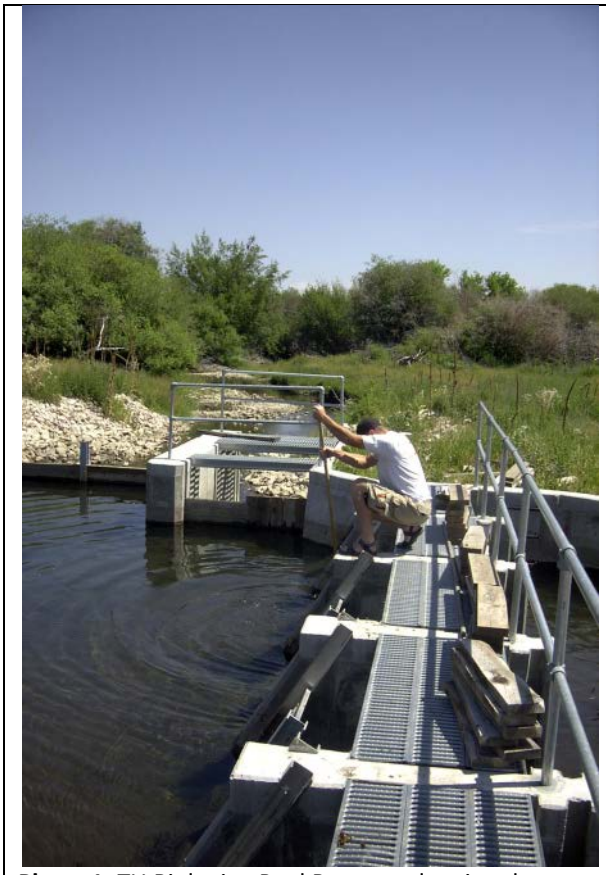

Photo 1: TU Biologist, Paul Burnett, cleaning the vertical flat plate screen in 2002 as a Graduate Student with Utah State University.

Photo 2: Bank Stabilization Area.

Photo 3: A close-up of the new rotary drum screens.

The Island Diversion was one of the first irrigation diversions screened on St. Charles Creek in 1999. Unfortunately, the design relied upon vertical flat plate screens, which frequently clogged with algae and debris, resulting in major maintenance challenges. Although several attempts were made to keep

the flat plate screens clear of debris, they were pulled in 2002. A large amount of lateral stream bank erosion occurred during the high flows of 2011. If allowed to continue, the erosion would have cut around the entire diversion structure.

Photo 4: A close-up showing the paddlewheel and hydraulic system.

Photo 5: Island Diversion in operation on 6/6/2012. A few minor project components were completed after this photo was taken. A video of this diversion project can be viewed at: http://youtu.be/KvvS0fnzsgg.

Cooperators

- Idaho Fish and Game
- U.S. Forest Service
- National Fish and Wildlife Foundation
- Island Diversion Water Company
- U.S. Fish and Wildlife Service
- Trout Unlimited
- Western Native Trout Initiative

Project Status

TU coordinated with project partners to employ a retrofit solution at the Island Diversion by removing the flat plate screens and installing two hydraulically driven rotary drums. Partners installed a hardened bank using large cobbles and large woody debris placement to stabilize the eroding bank. Native riparian vegetation is already beginning to reestablish on the disturbed soil.

All design and implementation work has been completed on the reconstruction of fish screens on the Island Diversion, located on the Big Arm of St. Charles Creek. TU contracted with McMillen, LLC to complete the design and construction of this project. Design of two 9-foot long, 36 inch diameter, hydraulically driven rotary drum screens occurred in August - November 2011. Construction was completed from March-August 2012. The contractors cut into the existing concrete structure to make room for the new screens. We needed to allow livestock and agricultural access between the paddlewheel and the screens. We decided to employ a unique hydraulic drive system, which used hydraulic oil pressure generated by the paddlewheel to spin the rotary drum screens.

The now-operational Island Diversion fish screen nearly completes the larger St. Charles Creek reconnection project, a watershed-scale effort to protect migratory adfluvial Bear Lake BCT. The effort currently includes fish screens to protect adfluvial Bear Lake BCT and enhanced upstream fish passage at six irrigation diversions. Only one irrigation diversion, the Lower South Diversion, remains unscreened in the watershed. Currently, TU and project partners are moving forward with plans to install fish screens and facilitate passage at this final migration obstacle.